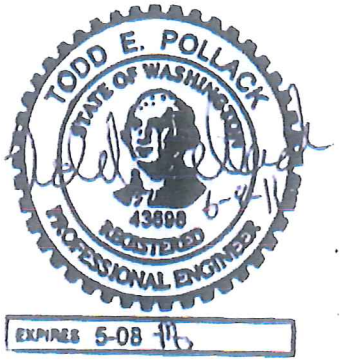
Burdett-Blueberry Lane Traffic Study

Client:

Jeff Burdett
Burdett-Blueberry Lane
P. O. Box 996
Monroe, WA 98272
(425)268-1143

June 9, 2016



SnoCo Traffic Studies, 806 33rd ST, Everett, WA 98201
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June 9, 2016

Mark Neumann
Civil Designer
City of Monroe
806 W Main ST
Monroe, WA 98272

RE: Burdett-Blueberry Lane; City of Monroe, Traffic Study; STS Project # 15-003

Dear Mr. Neumann:

Jeff Burdett, Applicant, has hired SnoCo Traffic Studies (STS) to provide a traffic impact analysis for the proposed Burdett-Blueberry Lane residential development in the City of Monroe. The following analysis addresses general traffic impact concerns typical of local jurisdictions.

INTRODUCTION

Scope of Project

The Burdett-Blueberry Lane development in the City of Monroe jurisdiction is to be located at property on the north side Blueberry Lane west of the intersection with Kelsey Street. There will be **112 new apartment dwellings (SFD)** built. Currently, the property is vacant, thus there will be a net gain of **112 units**, for traffic study calculation. The units of this project will access onto Blueberry Lane. **Figure 1** shows the **Project Vicinity Map**. The Applicant estimates a construction and occupancy date of 2017.

Technical Basis

The nationally accredited source for traffic trip generation is the *Trip Generation Manual*, 9th Edition, by the Institute of Transportation Engineers. ITE has done research to determine trip generation rates for Mid-Rise Apartments and designates this category as Land Use Code #223.

Todd Pollack, PE, is the Washington State licensed professional engineer affirming the credibility of this report. His PE stamp appears on this report.

EXISTING CONDITIONS

Street System

The project will access onto Blueberry Lane, west of the Kelsey Street intersection, a Local Access Road. There are improvements of curb, gutter, and sidewalk along Blueberry Lane. See photographs below. A speed limit of 25 mph is posted.

The existing street and highway system in the vicinity of the project site is shown on **Figure 1: Project Vicinity Map**.

Sight Distance Analysis

Snoco Traffic Studies paid a visit to the proposed Burdett-Blueberry Lane project site and examined the sight distance for the future driveway to this property.

SnoCo Traffic Studies assumed the strictest standards possible regarding sight distance for this project.

Using the strict standards of the nearby Snohomish County jurisdiction, Burdett-Blueberry Lane will have *over* 80 ADT; the major intersecting road is a Local Access Road, Blueberry Lane, and has a posted speed limit of 25 mph. Therefore, Table 3-9 of the Snohomish County EDDS calls for an Intersection Sight Distance (ISD) of **280 feet**. This is the distance for a driver waiting at the project's entrance to see oncoming vehicles. Snoco Traffic Studies measured a distance of 280 feet away from the access point, taking a photo from that distance of a brightly colored object at the driveway. Even at a distance of 400 feet in either direction, and with a curve of the roadway to the west, sight distance is adequate.

A road with a posted speed limit of 25 mph, Blueberry Lane has a required Stopping Sight Distance (SSD) of **155 feet** (using the speed of 25 mph and EDDS Table 3-6). This distance is that at which an approaching driver can view a vehicle resting at the project's driveway and the distance from which that oncoming vehicle can come to a stop. STS measured 400 feet to the east and west of the proposed access point and then photographed from that point the bright object placed at the proposed access point.

Sight distance should easily meet any standards.

Project Area Photographs

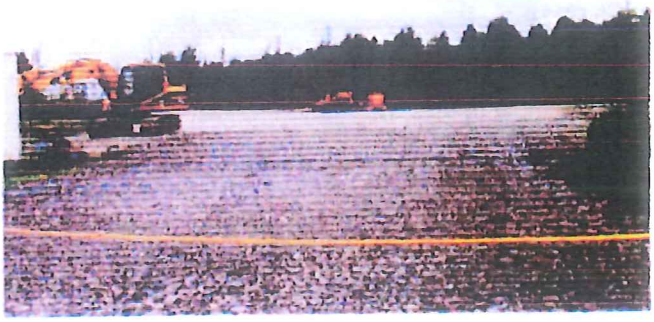
Northbound view to proposed access.

Westbound view along Blueberry Lane, of access point.

Eastbound view to access point from 400 feet west of it.

Westbound view to access, from 280 feet east of it.

Westbound view to access, from 400 feet east of it.



View of project site.

Accident Analysis

This project is not large enough to send enough trips through State intersections to trigger accident analysis; thus **high-accident location (HAL) analysis is not necessary**.

Level of Service

This project will not generate enough trips to require level of service analysis by any jurisdiction's standard.

FUTURE CONDITIONS

Trip Generation Problem--ITE Lacks Complete Data for This Type of Project

The ITE Trip Generation Manual has descriptions of various living units and predicts the Daily, AM and PM peak trips that a typical unit will generate. The ITE description best matching this project is ITE #223, Mid-Rise Apartment. The Manual defines, "Mid-rise apartments are apartments (rental dwelling units) in rental buildings that have between three and 10 levels.

However, the manual does not have a **Daily** rate for this specific category, although it does show **AM** and **PM** trip rates. The manual does show all trip rates (**Daily**, AM, PM) for category #222, High-Rise Apartment.

SnoCo Traffic Studies asserts that it would be reasonable to use the known rates and mathematical ratios to find the missing rate.

Known rates:

High-Rise Apartment, trips per dwelling unit: Weekday, 4.20; **AM**, 0.30; PM, 0.35
Mid-Rise Apartment, trips per dwelling unit: Weekday, ???; **AM**, 0.30; PM, 0.39

As Weekday trips are a combination of AM, PM, plus all other trips during the day, a mathematical ratio can be assumed:

$4.20/(0.30 + 0.35) = ???/(0.30+ 0.39)$

Solving for the unknown, the Mid-Rise Weekday/Daily rate is 4.46 trips per dwelling unit. This number is shown on the Trip Generation Calculation sheets.

Trip Generation

As mentioned in **Technical Basis**, ITE Land Use Code 223, Mid-Rise Apartment Unit, gives the trip generation rates for this project. With 112 net new apartment units being constructed, the Burdett-Blueberry Lane development will generate **500 ADTs, with 34 AM PHT (11 inbound/23 outbound)**, and **43 PM PHT (25 inbound/18 outbound)**. **Table 1 (Trip Generation Summary)** shows all trips and trip credits for this project. See the **Trip Generation**

Calculations sheets among the attachments for detailed calculation information.

With the trip generation numbers for the project calculated, the trips are routed in varying directions as they spread out from the project site. STS has used knowledge of local traffic patterns to determine a breakdown of new project trips, as shown on **Figure 2A: AM Trip Distribution**, which shows how trips will be distributed during the morning peak hour. **Figure 2B: PM Trip Distribution** shows how trips will be distributed during the afternoon peak hour.

STS estimates that 30% of site traffic will go west on Blueberry Lane, 55% of trips will go north right to the SR-2/Kelsey intersection; 15% will go south on Kelsey and then head east on Main. Eventually, 20% of all trips will go southwest on SR-522 and 50% of trips will take SR-2 toward Everett. Some 20% of trips will end locally, likely to one of the numerous business within City limits.

MITIGATION

WSDOT Mitigation

The State criterion for mitigation at State collection projects for developments in the City of Monroe, 10 PM peak-hour trips (per Steve Benenati, WSDOT, 9-6-12), is not met for any State intersection. **This project owes nothing to State mitigation.**

City of Monroe Mitigation

The City of Monroe has one traffic impact collection project: the Transportation Concurrency project. See **Table 2** as well as all figures. The collection project is based on estimated daily trips affecting roads and intersections mostly on the outskirts of the City. Figure 1 shows Monroe collection intersections. The Transportation Concurrency fee for Burdett-Blueberry Lane will be **$79,063.75.**

Snohomish County Mitigation

The City of Monroe has an interlocal agreement with Snohomish County government. It is assumed that 57% of project trips will impact County roads, thus the County fee will be **$47,264.58.**

SnoCo Traffic Studies has been pleased to perform the traffic impact analysis for this project. If the City or the Applicants have any questions about this report, please feel free to contact SnoCo Traffic Studies at (206) 782-1020.

Best regards,

Todd Pollack, PE
SnoCo Traffic Studies

CC: Jeff Burdett, Burdett-Blueberry Lane

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Table 1: Trip Generation Summary, Burdett-Blueberry Lane

Proposed Land Use Action	Number of Units	Average Daily Trips Generated	AM Peak-Hour Trips	AM In	AM Out	PM Peak-Hour Trips	PM In	PM Out
Apt. Units	112	499.52	33.60	10.42	23.18	43.68	25.33	18.35
Credit for SFD Removed	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Total New Units/Trips	112	499.52	33.60	10.42	23.18	43.68	25.33	18.35
Rounded Values		**500**	**34**	**11***	**23**	**43***	**25**	**18**

* Rounded to make numbers total properly.

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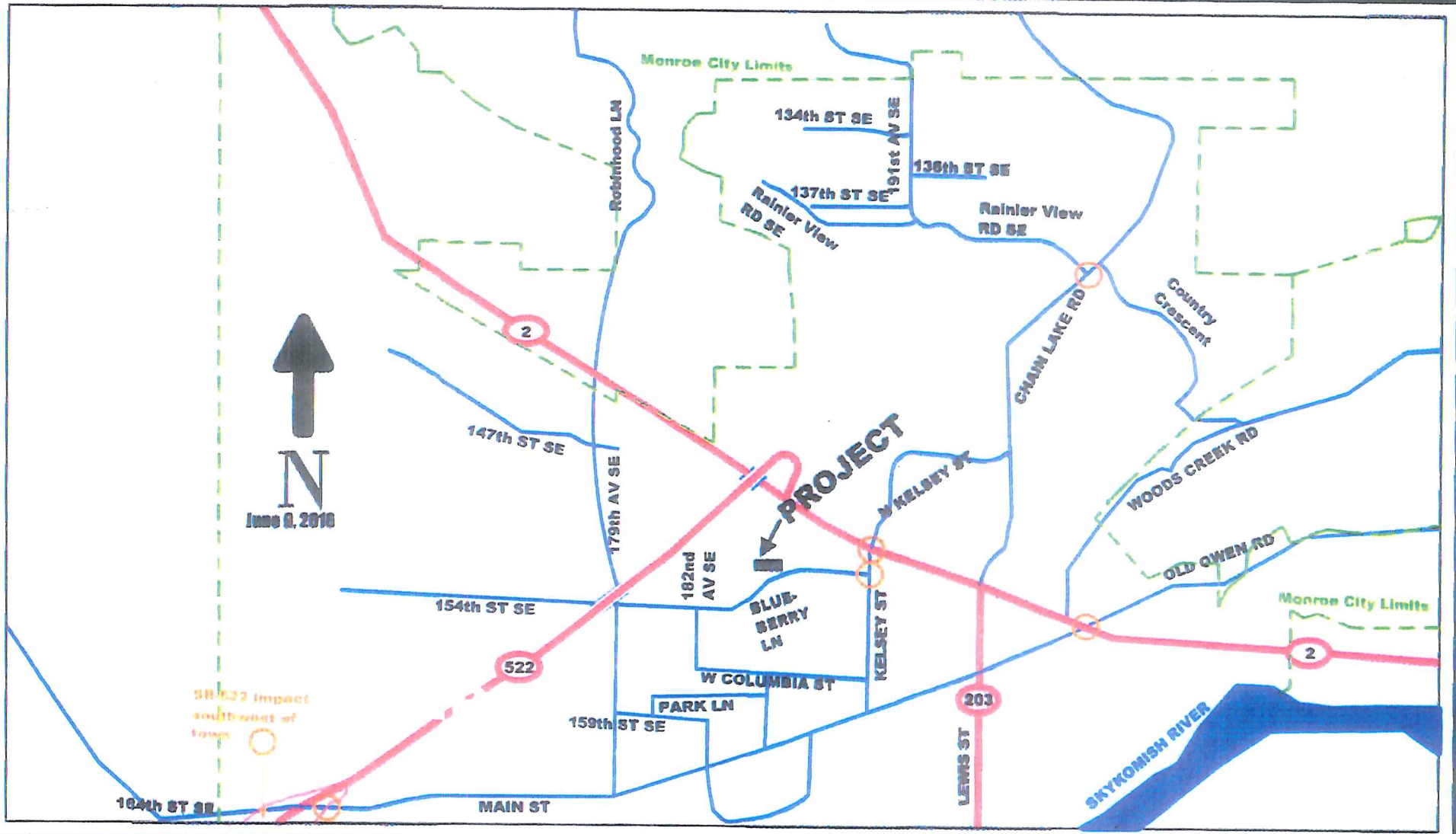
Table 2: City of Monroe Transportation Concurrency Mitigation
Snohomish County Mitigation
Burdett-Blueberry Lane

Project	ADTs Impacting This Project	Rate, in $/ADT	Fee
Kelsey ST/Blueberry LN	350.00	$78.91	$27,618.50
SR-2/Old Owen RD/Main ST	25	$36.63	$915.75
Kelsey ST/SR-2	275.00	$6.74	$1,853.50
Chain Lake Road	0.00	$653.58	$0.00
164th/SR-522/Tester RD	100.00	$202.93	$20,293.00
SR-522 Widening	100.00	$283.83	$28,383.00
City of Monroe Total	-	-	$79,063.75
Snohomish County Mitigation, 57% x Rate Rate in TSA "C" outside UGA	499.52	166.00	$47,264.58
Total Fees	N/A	N/A	$126,328.33



BURDETT-BLUEBERRY LANE
112 NET NEW MID-RISE APT. UNITS

SHBC8 TRAFFIC

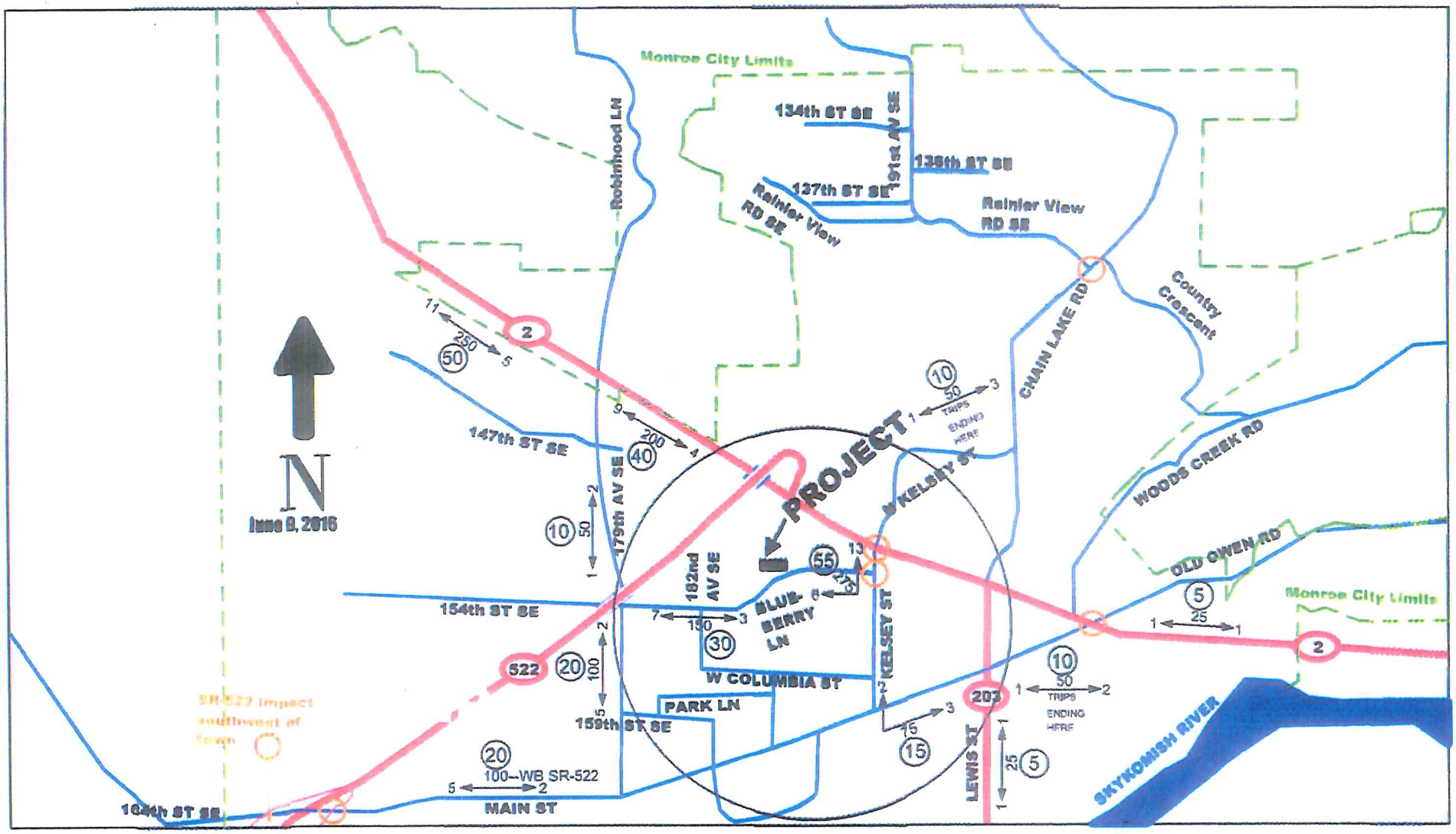
CITY OF MONROE

LEGEND

PROJECT SITE

TRANSPORTATION CONCURRENCY IMPACT FEE

FIGURE 1: PROJECT VICINITY MAP



BURDETT-BLUEBERRY LANE
112 NET NEW MID-RISE APT. UNITS

SNOCO TRAFFIC

CITY OF MONROE

LEGEND

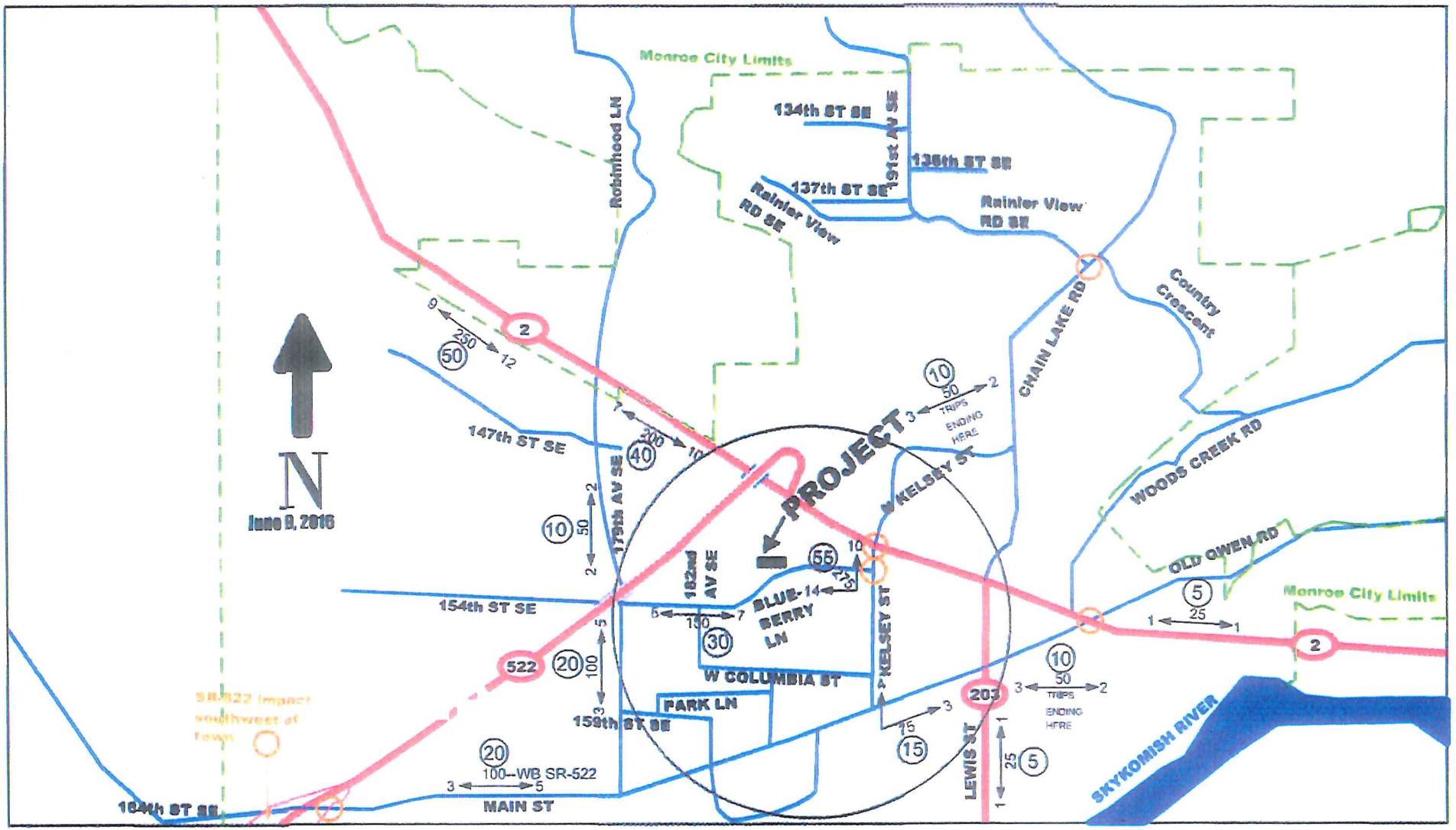
(20) % OF TOTAL TRIPS

5 ← 100 AVERAGE DAILY TRIPS (ADT) → 2 AM PEAK-HOUR TRIPS (INBOUND/OUTBOUND)

TRANSPORTATION CONCURRENCY IMPACT FEE

CIRCLE OF IMMEDIATE TRAFFIC IMPACT

FIGURE 2A: AM TRIP DISTRIBUTION



BURDETT-BLUEBERRY LANE
112 NET NEW MID-RISE APT. UNITS

SNOCO TRAFFIC

CITY OF MONROE

LEGEND

20 (3 ← 100 → 5) TRANSPORTATION CONCURRENCY IMPACT FEE

CIRCLE OF IMMEDIATE TRAFFIC IMPACT

FIGURE 2B: PM TRIP DISTRIBUTION

SNOCO TRAFFIC STUDIES

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Trip Generation Calculations - AM Rate			
Project:	Burdett-Bluebery Lane	Prepared By:	TEP
Project Number:	15-063	Date:	June 9, 2016

Average Daily Trips (ADT)		
ADT Trip Generation Rate	4.46	ADT per Mid-Rise Apartment Unit
Gross ADT	499.52	Gross ADT
New ADT	499.52	New ADT

Site Information		
ITE Code	223	Mid-Rise Apartment, per ITE Trip
New Units	112	Generation Manual, 9th Ed.
Units Removed	0	
Net New Units	112	

Weekday AM Peak Hour of Adjacent Street Traffic		
AM PHT Generation Rate	0.30	AM peak-hour trips per Mid-Rise Apartment Unit
Gross AM Peak Trips	33.60	
AM Peak Hour Trip Credits	0.00	
Net New AM Peak Hour Trips	33.60	

	Trip Factors (%)		ADT	AM Peak Hour Trips		
	ADT	Peak Hour	Total	Total	31% In	69% Out
Gross Total	100%	100%	499.52	33.60	10.42	23.18
SFD Removal	0%	0%	0.00	0.00	0.00	0.00
TDM Credit	0%	0%	0.00	0.00	0.00	0.00
Pass-By Trips	0%	0%	0.00	0.00	0.00	0.00
Diverted Trips	0%	0%	0.00	0.00	0.00	0.00
New Trips	100%	100%	499.52	33.60	10.42	23.18

SNOCO TRAFFIC STUDIES

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Trip Generation Calculations - PM Rate			
Project:	Burdett-Blueberry Lane	Prepared By:	TEP
Project Number:	15-083	Date:	June 9, 2016

Average Daily Trips (ADT)		
ADT Trip Generation Rate	4.46	ADT per Mid-Rise Apartment Unit
Gross ADT	499.52	Gross ADT
New ADT	499.52	New ADT

Site Information		
ITE Code	223	Mid-Rise Apartment, per ITE Trip
New Units	112	Generation Manual, 9th Ed.
Units Removed	0	
Net New Units	112	

Weekday PM Peak Hour of Adjacent Street Traffic		
PM PHT Generation Rate	0.39	PM peak-hour trips per Mid-Rise Apartment Unit
Gross PM Peak Trips	43.68	
PM Peak Hour Trip Credits	0.00	
Net New PM Peak Hour Trips	43.68	

	Trip Factors (%)		ADT	PM Peak Hour Trips		
	ADT	Peak Hour	Total	Total	58% In	42% Out
Gross Total	100%	100%	499.52	43.68	25.33	18.35
SFD Removal	0%	0%	0.00	0.00	0.00	0.00
TDM Credit	0%	0%	0.00	0.00	0.00	0.00
Pass-By Trips	0%	0%	0.00	0.00	0.00	0.00
Diverted Trips	0%	0%	0.00	0.00	0.00	0.00
New Trips	100%	100%	499.52	43.68	25.33	18.35